



Department of Defense INSTRUCTION

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ATSD(AE)/DDR&E

SUBJECT: Joint AEC-DoD Nuclear Weapons Development Procedures

- References:
- (a) DoD Directive 5030.2, "Joint AEC-DoD Nuclear Weapons, Conceptual/Feasibility Studies and Development Projects," January 4, 1974
 - (b) DoD Directive 5000.1, "Acquisition of Major Defense Systems," July 13, 1971
 - (c) DoD Directive 6050.1, "Environmental Considerations in DoD Actions," August 9, 1971
 - (d) DoD Instruction 7041.3, "Economic Analysis and Program Evaluation for Resource Management," October 18, 1972
 - (e) "An Agreement Between the AEC and the DoD for the Development, Production and Standardization of Atomic Weapons," March 21, 1953¹
 - (f) DoD Directive 5105.31, "Defense Nuclear Agency (DNA)," November 3, 1971
 - (g) DoD Directive 5000.19, "Policies for the Management and Control of DoD Information Requirements," June 2, 1971
 - (h) DoD Directive 3224.1, "Engineering for Transportability," August 1, 1968

1. PURPOSE

This Instruction supplements the provisions of and delineates responsibilities assigned under reference (a). It provides uniform procedures for the submission of requests for, and the conduct of, Joint AEC-DoD Phase 1 through Phase 5 nuclear weapons

¹ Copies available on a need-to-know basis from the Chairman, Military Liaison Committee.

conceptual/feasibility studies and development projects. It also includes the prescribed format and content of Military Characteristics and the Stockpile-to-Target Sequence and outlines procedures to be followed by the Design Review and Acceptance Group in conducting reviews of nuclear weapons designs.

2. APPLICABILITY

The provisions of this Instruction apply to the Office of the Secretary of Defense, the Military Departments, the Defense Nuclear Agency and the Office of the Joint Chiefs of Staff, (hereinafter referred to collectively as "DoD Components").

3. EXPLANATION OF TERMS

AEC-DoD nuclear weapons phases and terms are described in enclosure E1.

4. PROCEDURES

4.1. Weapon Conception Phase 1 Studies

4.1.1. A Phase 1 study can be formal or informal (see enclosure E1.). There is no set format or approach; however, the resulting Phase 1 information (sometimes called the Phase 1 Data Package) must contain sufficient information to permit the sponsoring DoD Component and the ODDR&E to evaluate the advisability of proceeding with a Phase 2 feasibility study. The Phase 1 information, to be considered complete, should contain insofar as practicable the information described in enclosure E2.

4.1.2. When the concept involves a nuclear warhead associated with a major system acquisition, the Phase 1 study will be completed and provided to the DDR&E at the proper time to permit coordination and input to the Development Concept Paper (DCP) for the "Program Initiation" phase of the major system. (See DoD Directive 5000.1 (reference(b)).)

4.2. Phase 2 Feasibility Studies

4.2.1. Initiation of Requests. Pursuant to the requirement outlined in DoD Directive 5030.2 (reference (a)), DoD Components submitting requests to DDR&E for approval of a joint Phase 2 feasibility study, will include a statement describing the status of the Phase 1 information and a proposed draft of a letter to AEC from DDR&E

containing the information outlined in enclosure E3. and requesting AEC participation.

4.2.2. Phase 2 Feasibility Study Procedures

4.2.2.1. The objective of the Phase 2 feasibility study is to determine the technical feasibility of developing a nuclear warhead to meet the stated Phase 1 requirements as modified by the guidance in the Phase 2 study letter from DoD to the AEC. Although the desirability or feasibility of the development of the associated weapon system(s) is not an issue, in some cases study of warhead/ delivery system trade-offs is indicated.

4.2.2.2. The Phase 2 study will present proposed solutions, available trade-offs, and recommendations to enable DoD Components to determine whether engineering development of a suitable warhead should be initiated. Sometimes this may include nominating a preferred weapon design approach.

4.2.2.3. Phase 2 feasibility study reports will normally conform to the requirements outlined in enclosure E4., and will in each case include a written environmental effects assessment in accordance with the provisions of DoD Directive 6050.1 (reference (c)).

4.2.2.4. DDR&E will designate a Military Department as the "cognizant Department" to lead an approved Phase 2 feasibility study. The cognizant Department in accordance with DoD Directive 5030.2 (reference (a)) will:

4.2.2.4.1. Assure distribution of the approved Phase 1 information to participating components/agencies.

4.2.2.4.2. Provide a chairman for all Phase 2 feasibility study meetings. (Insofar as practicable, the same person shall serve as chairman throughout the course of the study.)

4.2.2.4.3. Coordinate ongoing Phase 2 activities with interested DoD Components and prepare, coordinate, publish, and distribute minutes of the formal meetings and the Phase 2 feasibility study report.

4.2.2.4.4. Forward three copies of completed Phase 2 feasibility studies to the DDR&E and one to other interested DoD Components as soon as practicable after completion. This requirement will not be made contingent upon completion of coordination within the AEC of the impact and capabilities information normally requested in DoD's Phase 2 letter to the AEC.

4.2.2.5. Each DoD Component participating in the study shall designate a representative who will attend all meetings and be authorized to act as spokesman for that DoD Component.

4.2.2.6. Phase 2 studies of nuclear warheads for major defense systems will be completed prior to, and will be submitted with, a request for a Secretary of Defense decision to proceed with full scale development of the major system. (See "Full Scale Development," DoD Directive 5000.1 (reference (b)).)

4.2.3. Reopened Phase 2 Feasibility Studies

4.2.3.1. As required by DoD Directive 5030.2 (reference (a)), an annual review will be conducted by the Military Departments of those Phase 2 feasibility studies which have not progressed to Phase 3 engineering development, based on a consideration of the following:

4.2.3.1.1. Continued or renewed interest in the weapon concept.

4.2.3.1.2. Technical progress possibly applicable to the warhead/weapon concept.

4.2.3.1.3. The applicability of the original Phase 1 information.

4.2.3.2. Where the cognizant Department or other sponsoring DoD Component requests the reopening of a Phase 2 feasibility study a statement will be included outlining the basis for continuing or renewed interest in the weapon concept, and providing assurance that the original Phase 1 information remains applicable (with minor changes) to the reopened Phase 2 study. In the event feasibility was not initially established, a statement will be included affirming that technical advances (possibly applicable to the warhead and/or weapon concept) have become known.

4.3. Phase 3 Nuclear Weapons Development Projects

4.3.1. Requests to Initiate a Phase 3 Project. Pursuant to DoD Directive 5030.2 (reference (a)), Military Departments will submit requests for Phase 3 nuclear weapons development projects to the Secretary of Defense. The request will consist of a thoroughly supported case including cost/performance trade-offs and an analysis of the AEC's impact and capabilities (I&C) information. All feasible options will be clearly identified and evaluated; and the following decision considerations will be specifically addressed:

4.3.1.1. Affirmation and assessment of need. This section will include impact on mission effectiveness associated with decision options, namely: proceed no further; continue in Phase 2; begin Phase 3 development of the recommended warhead or an acceptable alternative. (In certain instances, it may be necessary to pursue Phase 3 development of two or more candidates until the uncertainties are resolved.)

4.3.1.2. Technological feasibility and risk assessment.

4.3.1.3. Costs in resources and dollars, nuclear materials availability, stockpile alternatives/projections and funding requirements for DoD designed and produced components. These considerations will be presented in the form of an economic analysis as described by DoD Instruction 7041.3 (reference (d)).

4.3.1.4. Environmental effects assessment in accordance with DoD Directive 6050.1 (reference (c)).

4.3.2. In addition the Phase 3 request will include a warhead development plan which will:

4.3.2.1. State the objectives of and issues to be resolved during the development phase, including the joint test objectives and the requisites for the production decision.

4.3.2.2. Describe the program management structure.

4.3.2.3. Include a development schedule and milestone estimates leading to the desired initial operational capability (IOC) date.

4.3.2.4. Furnish a proposed (tentative) joint agreement between the AEC and the DoD on the division of responsibilities on the project. If the proposed agreement is not formally coordinated with the AEC in draft, informal AEC comments on the proposed division of responsibility should be provided.

4.3.3. Phase 3 Development Project Responsibilities of the Cognizant Department. The cognizant Department designated by DDR&E to lead an approved project for the DoD, in addition to Phase 3 responsibilities described elsewhere in this Instruction, is responsible for:

4.3.3.1. Concluding a formal joint agreement with the AEC for the division of responsibilities on the approved project in accordance with the terms of the

AEC-DoD Agreement (reference (e)) as soon as possible after DDR&E approves the project. The final agreement will be coordinated with all interested DoD Components.

4.3.3.2. Designing, developing, and producing those components of the weapon which are specified as the responsibility of the DoD under the terms of the negotiated specific agreement after ensuring that the requirements of other interested Military Departments have been considered and that the characteristics and environments specified for DoD-produced weapon system components are compatible with similar guidance provided to the AEC for AEC-produced components.

4.4. AEC-DoD Information Exchanges and Liaison Responsibilities. The following procedures govern the exchange of information and coordination between DoD and AEC.

4.4.1. General. Joint AEC-DoD nuclear weapons conception and development involves information exchanges and liaison of three broad types:

4.4.1.1. The first will involve the mutual development and transmission of information describing a new weapon in progressive stages beginning with the Phase 1 concept information followed by a Phase 2 feasibility study and culminating with a Phase 3 development project. At each phase, the new weapon will be defined in terms of Military Characteristics (MC's) and the Stockpile-to-Target Sequence (STS). The MC's and the STS will evolve in detail and formality through these three phases and will be distributed after Phase 2 and the start of Phase 3 as outlined in paragraphs 4.4.2. and 4.4.3. below.

4.4.1.2. The second type of interaction will consist of reciprocal coordination and consultation, both formal and informal, which will be effected through project officers designated by the interested AEC and DoD agencies to represent their interests (4.4.4. below). These exchanges will continue for the stockpile life of the warhead.

4.4.1.3. In addition the AEC will publish, as a development project progresses through Phase 3 and into Phases 4 and 5, a series of development reports (preliminary, interim and final) which will be formally reviewed by the Design Review and Acceptance Group (DRAAG) in accordance with procedures outlined in 4.4.5. below. The review of the AEC design for compliance with the MC's (as amplified by the STS) for all practical purposes will be a continuous process which will culminate in a recommendation for standardization action by the Military Liaison Committee to the AEC to accept the weapon as a "Standard" or "Limited" stockpile item. Ideally, in

accordance with the AEC-DoD Agreement this action will terminate Phase 5, "Initial Production" and provide the basis for the decision to start Phase 6, "Quantity Production."

4.4.2. Military Characteristics (MC's)

4.4.2.1. MC's are defined in enclosure E1. They normally will be originated in outline form as a part of the Phase 1 weapon concept information. Procedures for preparation, coordination and submission of the MC's to the MLC by the cognizant Department after a favorable Phase 2 study and after DoD approval of a Phase 3 project are contained in enclosure E5.

4.4.2.2. After approval by the MLC, the MC's will be published and distributed by the Defense Nuclear Agency (DNA). The DNA will periodically publish and distribute to all participating DoD Components an index of all current MC's and MC changes.

4.4.2.3. Changes to approved MC's will be initiated by or through the cognizant Department and will be coordinated, submitted to the MLC for approval, published, and distributed in the same manner as the basic MC's.

4.4.3. Stockpile-to-Target Sequence (STS)

4.4.3.1. The STS is defined in enclosure E1. Procedures for preparation, coordination and submission of the STS by the cognizant Department after a favorable Phase 2 study and after DoD approval of a Phase 3 project are contained in enclosure E5.

4.4.3.2. Format and content of the STS will be in accordance with "Procedures for the Preparation and Use of Stockpile-to-Target Sequences for Nuclear Weapons" published and distributed by the DNA in the Joint Atomic Weapon Publication System (JAWPS) (AEC-DNA TP 50-20, Army T.M. 39-50-20, Navy SWOP 50-20, Air Force TO 11N-50-20).² Responsibility for maintaining the currency of the joint publication, in coordination with interested OSD offices, the OJCS, the MLC and other DoD Components and the AEC is hereby assigned to the Department of the Army. All amendments will be approved by DDR&E prior to publication.

² Copies available through Military Department and DNA administrative channels.

4.4.4. Nuclear Weapons Development Project Officers. Liaison between the DoD and the AEC will be accomplished through project officers formally

designated by the various components in accordance with DoD Directive 5030.2 (reference (a)). The detailed responsibilities of the project officers and the procedures to be employed in coordinating the AEC-DoD interface in nuclear weapon development projects will be provided by a formally negotiated memorandum of understanding between the development agencies of the AEC and the DoD. (See enclosure E6.)

4.4.4.1. Lead responsibility is hereby assigned to the Department of the Air Force, in coordination with the other DoD Components for maintaining the agreement in a current status to reflect coordinated AEC and DoD needs.

4.4.4.2. The initial general revision and all subsequent changes will be forwarded, after coordination, to the DDR&E for review prior to final submission to the AEC for signature. The revised version of the agreement and future changes will be attached to this Instruction as enclosure E6.

4.4.5. Design Review and Acceptance Group (DRAAG) Procedures and Weapon Standardization

4.4.5.1. The function of the DRAAG is to review for the Departments of the Army, Navy, and Air Force, the MLC and other interested DoD Components an AEC proposed nuclear weapon/warhead design to determine compliance with the MC's and to recommend to the MLC whether or not the design should be accepted as a "Standard" stockpile or "Limited" stockpile item based on the AEC's final development report.

4.4.5.2. The responsibilities and composition of the DRAAG and the procedures to be followed are outlined in DoD Directive 5030.2 (reference (a)) and enclosure E7.

4.5. Interaction With Defense Nuclear Agency. The Military Departments shall provide Phase 1, 2 and 3 nuclear weapon development information to the DNA upon request and whenever appropriate to enable that agency to perform the functions specified in DoD Directive 5105.31 (reference (f)).

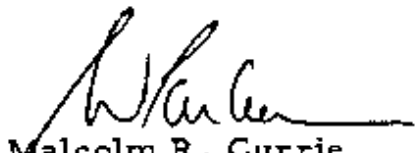
5. REPORTING REQUIREMENTS

The study reports, data compilations, reviews, analyses, etc., and the continuous information exchanges prescribed herein are exempt from the requirement for further approval and/or licensing in accordance with paragraph III.D.3., DoD Directive


5000.19 (reference (g)). The assignment of a Reports Control Symbol is not required.

6. EFFECTIVE DATE AND IMPLEMENTATION

This Instruction is effective immediately. The Military Departments and the DNA will forward two copies of revised implementing regulations to the Director of Defense Research and Engineering and two copies to the Chairman, MLC, within 90 days.



Malcolm R. Currie
Director of Defense Research
and Engineering



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Enclosures - 7

1. AEC-DoD Nuclear Weapons Phases & Terms
2. Checklist of Phase 1 Weapon Conception Info
3. Info Included in a DoD Rqst for AEC Participation in a Jt. Phase Feasibility Study
4. Format/Content of a Phase 2 Feasibility Study
5. Mil Char (MC's) and Stockpile-to-Target Sequence (STS)
6. AEC-DoD Memo of Understanding re Nuclear Weapons Development Project Officer Liaison Procedures
7. Design Review & Acceptance Group Response & Procedures for Nuclear Weapons Design Reviews & Standardization

E1. ENCLOSURE 1

AEC/DoD NUCLEAR WEAPON PHASES AND TERMS

E1.1.1. Phase 1 - Weapon Conception is the first phase of a seven-phase AEC-DoD weapons project. Phase 1 consists of continuing studies by AEC laboratories, DoD agencies, and others. A continuous exchange of information, both formal and informal, is conducted among individuals and groups. This results in the focusing of sufficient interest in an idea for a new weapon or component to warrant a program study.

E1.1.2. Phase 2 - Determination of Feasibility and Responsibility. This phase includes the determination of the feasibility and desirability of undertaking the development of a new weapon or component, the establishment of its military characteristics, and the determination of respective responsibilities between the AEC and the DoD for the various tasks involved in its development and procurement.

E1.1.3. Phase 3 - Development Engineering. This phase includes those events beginning with the launching of AEC's development program, through the determination of development specifications, and culminating in the design release by the design laboratories.

E1.1.4. Phase 4 - Production Engineering. This phase covers those activities that adapt the developmental design into a manufacturing system which can produce weapons and components on a production basis. It culminates in the AEC release of the design for production.

E1.1.5. Phase 5 - First Production. This phase comprises the delivery of the first weapons from production, their evaluation by the AEC and DoD, and terminates in the DoD's formal standardization action or approval for quantity production.

E1.1.6. Phase 6 - Quantity Production. During this phase the AEC undertakes the quantity production of weapons for stockpile.

E1.1.7. Phase 7 - Retirement. This phase begins when a program of physical removal of the weapon from the DoD stockpile is indicated.

E1.1.8. Military Characteristics (MC's). The Military Characteristics define the DoD requirements for a specific nuclear weapon/warhead. They describe required weapon yields and fuzing options, warhead operational, physical, functional,

environmental, vulnerability, safety and reliability parameters; describe maintenance, monitoring, storage and handling considerations; and set forth the priority of design compliance in the event of conflicting design requirements.

E1.1.9. Stockpile-to-Target Sequence (STS). The STS will supplement the MC's and provide technical detail primarily to the AEC design agency and secondarily to the DoD design agency. It will define the logistical and employment concepts and related physical and nuclear environments including vulnerability criteria anticipated in the delivery of a nuclear weapon from the stockpile to the target. It also will define the logistical flow involved in moving nuclear weapons to and from the stockpile for quality assurance testing, modification and retrofit, and the recycling of limited life components.

E1.1.10. Standard Stockpile Item. A nuclear weapon which meets the approved Military Characteristics to the extent that the DoD desires no further AEC development effort on the nuclear warhead, bomb, or associated AEC-developed components.

E1.1.11. Limited Stockpile Item. A nuclear weapon for which conformance to the approved Military Characteristics has not been satisfactorily demonstrated to the DoD and on which the DoD desires further AEC development effort on the nuclear warhead, bomb, or associated AEC-developed components.

E2. ENCLOSURE 2

CHECKLIST OF PHASE 1 WEAPON CONCEPTION INFORMATION

E2.1.1. A Phase 1 study report should include, to the extent practicable, the following information in a format as prescribed by the sponsoring DoD Component:

E2.1.1.1. Objective

E2.1.1.1.1. Purpose of Study

E2.1.1.1.2. Warhead/Bomb Characteristics and Parameters

E2.1.1.2. Description of Weapon System

E2.1.1.2.1. General Description

E2.1.1.2.2. Performance Parameters

E2.1.1.2.3. Mission Profiles

E2.1.1.2.4. Transportability (DoD Directive 3224.1 (reference (h))),
Storage and Ground Handling Considerations

E2.1.1.2.5. Weapon/Delivery System(s) Compatibility Requirements

E2.1.1.2.6. Sensitive Parameters, deviations from which would be
critical to the successful development of the weapon system

E2.1.1.3. Operational Concepts

E2.1.1.3.1. Weapon System Employment Concepts

E2.1.1.3.2. Delivery Techniques

E2.1.1.3.3. Weapon/Warhead/Bomb Limiting Parameters (Physical)

E2.1.1.3.4. Yield and/or Effect Selection

E2.1.1.3.5. Fuzing Options

E2.1.1.3.6. Escape Procedures/Safe Separation Distance

E2.1.1.3.7. Desired and Undesired Effects

E2.1.1.3.8. Typical Targets

E2.1.1.3.9. Unusual or Overriding Safety Considerations

E2.1.1.3.10. Command and Control Features Required and/or Desired
(e.g., applicability of weapon system to NATO program cooperation or other
extra-CONUS program)

E2.1.2. Much of the above information can conveniently be expressed in the
format of:

E2.1.2.1. Outline Military Characteristics (MC's) - to include but not be
limited to weapon parameters and yield, fuzing options, vulnerability, and reliability.

E2.1.2.2. Draft Stockpile-to-Target Sequence (STS) - as complete as possible
with severe environments emphasized and vulnerability criteria specified.

E3. ENCLOSURE 3

INFORMATION INCLUDED IN A DoD REQUEST FOR AEC PARTICIPATION IN A JOINT PHASE 2 FEASIBILITY STUDY

E3.1.1. The following information as a minimum is normally included in a DDR&E request to the AEC to participate in a joint Phase 2 feasibility study:

E3.1.1.1. A statement of the study objectives, including a description of the weapon system.

E3.1.1.2. Notice of the designation of the cognizant Department which will preside over the feasibility study and participate with the AEC and other DoD Components known to have an interest in the employment of the weapon/warhead if it should be developed.

E3.1.1.3. A listing of warhead/weapon parameters giving approximate dimensions (maximum/minimum), weights, yields, safing/arming/fuzing options, release altitudes and desirable and undesirable effects.

E3.1.1.4. A statement on specific requirements such as yield selectability, warhead interchangeability, command and control systems and other pertinent information. In addition, when a range of yields or effects is required, a statement of the relative importance and percent of expected usage of each yield or effect shall be provided.

E3.1.1.5. A statement of first production unit (FPU) and initial operational capability (IOC) dates with the number of weapons desired. Subsequent pegpoint dates and quantities for operational and spare warheads. Total operational quantity, including spares.

E3.1.1.6. A statement of warhead definition and unusual features of planned use.

E3.1.1.7. A listing of planned system compatibility/carriage (aircraft/missile etc.).

E3.1.1.8. A statement of requirement for unusual safety features.

E3.1.1.9. A statement of other study considerations, such as a desire for

parametric treatment showing relationships among specifically designated variables (e.g., yield, costs, active materials, dimensions, weight, yield selectability, aircraft release conditions); whether design proposals should be based on off-the-shelf designs, state-of-the art, etc.

E3.1.1.10. A request for a separate AEC impact and capability study. A reasonable number of alternative DoD warhead deployment schedules will be provided. If appropriate the AEC will be requested to include in the impact and capabilities study an independent view of the potential benefits which may be achieved through modification of the candidate warhead designs, such as use of "natural" versus specified yields, alternative warhead or limited lifetime component lifetimes, and trade-offs of physical parameters to achieve nuclear materials savings.

E3.1.1.11. If appropriate, the due date of the Phase 2 feasibility study, allowing sufficient time for (1) the AEC laboratories to assimilate the Phase 1 weapon conception information before the first Phase 2 feasibility study meeting (minimum of about one month), and (2) inter-office coordination and completion of the report after the final Phase 2 feasibility study meeting (usually about one and one-half months).

E4. ENCLOSURE 4

FORMAT AND CONTENT OF A PHASE 2 FEASIBILITY STUDY

E4.1.1. The feasibility study report will adhere generally to the following format:

E4.1.1.1. Objectives

E4.1.1.2. References

E4.1.1.3. Background Information

E4.1.1.4. Facts Bearing on the Problem

E4.1.1.5. Weapon/Warhead Discussion

E4.1.1.6. Compatibility of Bomb/Warhead with Weapon System

E4.1.1.7. Environmental Effects Assessment

E4.1.1.8. Conclusions

E4.1.1.9. Recommendations

E4.1.2. Phase 2 feasibility study reports should provide answers to the following questions:

E4.1.2.1. What nuclear devices in production or under development appear to meet the requirement? What are the advantages and disadvantages of each? If no qualified devices are under development or in production, what are the characteristics of conceivable warheads that would meet this requirement?

E4.1.2.2. Considering only the development of this particular warhead/bomb, and without regard to other programs that might be conducted concurrently, what is the estimated length of time required for development after DoD requests commencement of a Phase 3 development engineering project?

E4.1.2.3. In the context of the overall atomic energy program, what time scales might be expected for development after Phase 3 authorization during the course of a normal program? What technical development problems would be involved if the time scales were significantly decreased?

E4.1.2.4. What development problems can be foreseen that appear difficult to solve? Do any problems require development effort on a scale that is greater or less than normal?

E4.1.2.5. What special training, operational, or logistical problems are foreseen concerning the warhead that should be considered for Phase 3 development engineering?

E4.1.2.6. What, if any, additional experimental or theoretical investigation is required to establish feasibility?

E4.1.2.7. What is the technical evaluation and/or recommendation made by the AEC representatives concerning nuclear testing prior to weaponizing the device for stockpile?

E4.1.3. Although the AEC will provide more detailed information in its independent impact and capabilities (I&C) study, the AEC study may not be available for some time after the Phase II study is complete. Therefore, the following questions should also be answered in the Phase 2 feasibility study. (The information may be in a preliminary form with appropriate disclaimer by the AEC's study participants if necessary to prevent delay in completion and forwarding of the study to the interested DoD Components. In any event, the forwarding of the study will not be delayed while awaiting AEC completion of the I&C study.):

E4.1.3.1. What possible technical or economic advantages or nuclear materials savings would accrue from reasonable warhead/weapon system trade-offs and changes in the requirements stated in the authorization for the Phase 2 feasibility study such as use of "natural" versus specified yields, alternative warhead or limited life component lifetimes, trade-off of physical parameters to achieve nuclear materials savings, etc.? What effects would these changes have on the orderly development of the delivery system?

E4.1.3.2. What is the quantity of nuclear materials required for the proposed device? Will the number of weapons desired present any predictable problems in providing the necessary nuclear materials?

E4.1.3.3. If the stated time scales of paragraph E4.1.2.3. above, are to be met, what would be the estimated impact, if any, on other authorized DoD programs which would be concurrently supported by AEC?

E5. ENCLOSURE 5

MILITARY CHARACTERISTICS (MC'S) AND STOCKPILE-TO-TARGET SEQUENCE (STS)

E5.1.1. Procedures for Publishing MC's

E5.1.1.1. As soon as possible after completion of a favorable Phase 2 feasibility study the cognizant Department shall prepare and distribute draft MC's in the format and content outlined herein to appropriate OSD offices, to other interested DoD Components, and to the AEC.

E5.1.1.2. During preparation of a Phase 3 request, the initiating Military Department will solicit comments on the draft MC's from the OSD, the other interested components and the AEC and will attempt to resolve differences so that coordinated draft MC's may be forwarded with the supporting material provided to DDR&E with the Phase 3 request. Extracts of these draft MC's revised to reflect DoD Phase 3 decisions will be included in the Phase 3 letter to the AEC. This is normally provided in the form of an attachment to the basic letter.

E5.1.1.3. Upon approval of the Phase 3 request by DDR&E and after DDR&E transmits the request for AEC cooperation in the development project, the cognizant Department will forward proposed MC's to the MLC for coordination and approval and transmission to the AEC. The MC's should be forwarded to the MLC as soon as possible, but not later than thirty days after the date of the aforementioned letter to the AEC.

E5.1.2. Outline of MC's Format

E5.1.2.1. General.*

E5.1.2.1.1. Purpose

E5.1.2.1.2. Contingencies

E5.1.2.1.3. Competing Characteristics

* NOTE: The paragraph numbering system to be used in MC's will conform to the system used in Joint Atomic Weapons Technical Publications.

E5.1.2.2. Warhead Characteristics

E5.1.2.2.1. General Considerations

E5.1.2.2.2. Operational Considerations

E5.1.2.2.3. Physical Characteristics and Parameters

E5.1.2.2.4. Required Weapon System or Aircraft Compatibility

E5.1.2.2.5. Internal Functioning and/or Fuzing Considerations

E5.1.2.2.6. Environmental and Vulnerability Considerations

E5.1.2.2.7. Reliability Considerations

E5.1.2.2.8. Safety Considerations

E5.1.2.2.9. Maintenance, Monitoring, Transportability (DoD Directive 3224.1 (reference (h))), Storage and Handling Equipment Considerations. (This will include the requirement to use existing equipment and designs when feasible.)

E5.1.2.2.10. Command and Control Considerations

E5.1.2.2.11. Other Requirements as Appropriate

E5.1.2.3. Miscellaneous - to contain any other items applicable

E5.1.3. Procedures for Publishing STS

E5.1.3.1. As soon as possible after completion of a favorable Phase 2 study, the cognizant Department shall prepare and distribute a draft STS to appropriate OSD offices, to other interested DoD Components, and to the AEC.

E5.1.3.2. Format and content of the STS will be in accordance with "Procedures for Preparation and Use of Stockpile-to-Target Sequences for Nuclear Weapons" which is a publication in the Joint Atomic Weapon Publication System (JAWPS) (AEC-DNA TP 50-20, Army T.M. 39-50-20, Navy SWOP 50-20, Air Force TO 11N- 50-20).

E5.1.3.3. Not later than 60 days after transmittal of the DoD request for AEC

cooperation in a Phase 3 project the cognizant Department will forward a coordinated Stockpile-to-Target Sequence (STS), revised to reflect any changes necessitated by the Phase 3 decision process, to the AEC and to interested DoD Components including the OSD and the MLC. (Initially this may be in the form of a "blueline" copy pending publication and distribution of the printed copy if necessary to insure timely availability of the needed information to the AEC design agency.) The cognizant Department will insure that this single STS represents the coordinated technical requirements both common and unique of all interested Departments and the JCS.

E5.1.3.4. It is recognized that the STS may not be fully complete and definitive at the time of the Phase 3 authorization and that subsequent revisions may be necessary. However, no revisions of the STS will impose requirements which will operate to increase the cost of the weapon over the level approved by DDR&E in the Phase 3 decision without specific approval by the OSD.

E6. ENCLOSURE 6

A Memorandum of Understanding Between the Energy Research and Development Administration and the Department of Defense On Nuclear Weapons Development Liaison Procedures

SHORT TITLE: ERDA-DOD Project Officer Liaison Procedures

E6.1.1.1. PURPOSE.

This memorandum of understanding (MOU) supersedes A Memorandum of Understanding Among the Atomic Energy Commission, Albuquerque Operations; Field Command, Defense Atomic Support Agency; U.S. Army Materiel Command; Naval Material Command; Air Force Systems Command on Nuclear Weapons Development Liaison Procedures, dated 10 January 1967, and modification 1 thereto, dated 6 June 1968 (ALO Contract Number ALO M/U AT (29-2)-2225). It outlines the procedures for employing Nuclear Weapon Development Project Officers to coordinate the Energy Research and Development Administration (ERDA) and Department of Defense (DOD) interface in nuclear weapon development projects.

E6.1.1.2. AUTHORITY.

Authority for the assignment of Nuclear Weapon Development Project Officers and subsequent liaison activities is based on the AEC-DOD Agreement of March 21, 1953, on the development, production, and standardization of atomic weapons; the Department of Defense Directive 5030.2 on Joint AEC-DOD Nuclear Weapons Conceptual/Feasibility Studies and Development Projects, dated 4 January 1974; and the Department of Defense Instruction 5030.55 on Joint AEC-DOD Nuclear Weapons Development Procedures, dated 21 January 1974.

E6.1.1.3. DEFINITIONS:

E6.1.1.3.1. Nuclear Weapons Development Project Officers (herein-after referred to as Project Officers): Persons assigned in accordance with the provisions of paragraph E6.1.1.5. below to coordinate the development of nuclear weapons, and to ensure that the compatibility across the ERDA-DOD weapon interface is maintained throughout the stockpile life of the weapon.

E6.1.1.3.2. Cognizant Service (Cognizant Department). The military

service designated by the Director of Defense Research and Engineering to lead the development project for the DOD.

E6.1.1.3.3. Lead Project Officer. The Project Officer responsible for coordinating the efforts of other Project Officers for nuclear weapons projects under the terms of this MOU.

E6.1.1.3.4. Member Organization. An organization, agency, or office which designates a Project Officer for nuclear weapons projects under the terms of this MOU.

E6.1.1.3.5. Project Officer Meeting (POM). A meeting of Project Officers to coordinate nuclear weapons projects. Representatives from other organizations that have an interest in the project may attend to provide technical assistance and support.

E6.1.1.3.6. Coordinated Project Summary (CPS). A coordinating document prepared early in Phase 3 of a nuclear weapon development project by the Project Officers. This summary will highlight significant project milestones, information requirements, and decision points. It will outline the interfaces and agreements between ERDA and DOD development and production programs, provide a means to follow DOD and ERDA progress, and give visibility to issues requiring prompt resolution. The CPS should be brief and concise to aid senior managers to easily review the project. Graphical presentation is encouraged. The CPS will be amended and republished as necessary to reflect changes in development/production/deployment planning. The CPS will be prepared and distributed by the Lead Project Officer using input from the various member organizations.

E6.1.1.4. RESPONSIBILITIES.

E6.1.1.4.1. Project Officers shall have authority vested in them by their parent organizations to carry out the assigned responsibilities of those organizations as specified herein. They will act as points of contact for their agencies in coordinating the development of nuclear weapons and in assuring compatibility of associated weapon interfaces. The assignment of Project Officers does not alter the normal functions and responsibilities of the agencies or Services involved.

E6.1.1.4.2. The functions of Project Officer Meetings are:

E6.1.1.4.2.1. To coordinate the research, development, test, and

evaluation activities performed by the Services and the ERDA on joint ERDA-DOD nuclear weapons development project.

E6.1.1.4.2.2. To make technological trade-off decisions during the program which do not significantly change the military characteristics or acceptability of the weapon, or exceed program limits set by the DOD/Services and ERDA.

E6.1.1.4.2.3. To notify the Services and Military Liaison Committee (MLC) through meeting minutes of interpretations of the military characteristics and of minor changes made to them as a result of POM decisions authorized by E6.1.1.4.2.2. above, and to recommend significant changes to military characteristics to the MLC, through Service channels, for approval.

E6.1.1.4.2.4. To give visibility to issues affecting safety, cost, performance, or other significant matters which cannot be promptly resolved at POM level.

E6.1.1.5. PROJECT OFFICER ASSIGNMENTS. Project Officer assignment procedures given below are of a guideline nature intended to provide information on assignment practices normally followed:

E6.1.1.5.1. The Energy Research and Development Administration will be represented by the Manager, Albuquerque Operations Office; the Director, Los Alamos Scientific Laboratory; the President, Sandia Laboratories; and the Director, Lawrence Livermore Laboratory, as appropriate. Each of these representatives will appoint a Project Officer, as appropriate, to his responsibility. Sandia Laboratories, Albuquerque, and Sandia Laboratories, Livermore, may each be represented by a Project Officer when both are involved in the same development project.

E6.1.1.5.2. The Services normally appoint Project Officers as follows:

E6.1.1.5.2.1. U.S. Army:

E6.1.1.5.2.1.1. U.S. Army Materiel Command (AMC)

E6.1.1.5.2.1.2. U.S. Army Training and Doctrine Command
(USATRADO)

E6.1.1.5.2.1.3. Other USA organizations or contractors as designated by the U.S. Army Materiel Command

E6.1.1.5.2.2. U.S. Navy:

E6.1.1.5.2.2.1. Chief of Navy Material (CNM)

E6.1.1.5.2.2.2. Other USN organizations or contractors as designated by CNM

E6.1.1.5.2.3. U.S. Air Force:

E6.1.1.5.2.3.1. Air Force Systems Command (AFSC)

E6.1.1.5.2.3.2. Air Force Logistics Command (AFLC)

E6.1.1.5.2.3.3. Other USAF organizations or contractors as designated by AFSC or AFLC

E6.1.1.5.2.4. The Service Project Officer appointments outlined above apply when a Service shares directly in development responsibilities for a project. When a Service does not share in the responsibility for a project development but has an interest in it, that Service may have a Project Officer or representative if it desires.

E6.1.1.5.3. The total number of Project Officers assigned by the Services and the ERDA for a specific interface development project should not normally exceed five each.

E6.1.1.5.4. The Defense Nuclear Agency (DNA), at its discretion, may participate at POMs and other appropriate meetings by designating representatives to serve as follows:

E6.1.1.5.4.1. Monitor the development project for DNA and provide technical assistance and support in consonance with DOD Directive 5105.31.

E6.1.1.5.4.2. Provide technical assistance and support related to nuclear weapon safety requirements within the safety subcommittee.

E6.1.1.5.5. The cognizant Service, as designated by DDR&E, shall as soon as practicable designate a Lead Project Officer for the weapon development project and announce his name to appropriate agencies. The Lead Project Officer should normally hold the rank or equivalent civilian rating of a field grade officer.

E6.1.1.5.6. Designations of Project Officers and changes to these designations shall be made in writing by member organizations to the Lead Project Officer. There shall be no regular alternate Project Officers; however, an organization may, with prior notification to the Lead Project Officer, appoint an alternate to attend a particular Project Officer Meeting.

E6.1.1.5.7. To assure continued points of contact after the development phase is completed, Project Officers should be provided throughout the operational life of the weapon/warhead when necessary to carry out responsibilities covered by this MOU.

E6.1.1.6. DUTIES OF PROJECT OFFICERS. Project Officers will:

E6.1.1.6.1. Coordinate joint efforts in ERDA-DOD nuclear weapons programs.

E6.1.1.6.2. Coordinate interface matters between the ERDA developed components and the military application thereof, including coordination to assure that interface control documents are prepared, maintained, and approved.

E6.1.1.6.3. Coordinate investigations concerning weapon/warhead design trade-offs as they affect weapon capability, reliability, safety, maintainability, testability, vulnerability, costs, etc.

E6.1.1.6.4. Coordinate required changes and updating of the military characteristics (MC's) and stockpile-to-target sequence (STS).

E6.1.1.6.5. Coordinate joint development test programs.

E6.1.1.6.6. Insure timely exchange of information.

E6.1.1.7. ADDITIONAL DUTIES OF LEAD PROJECT OFFICERS. Lead Project Officers will additionally:

E6.1.1.7.1. Request designation of Project Officers by member organizations and representatives by other participating organizations.

E6.1.1.7.2. Insure that all member and representative organizations are advised of names of currently assigned Project Officers and representatives.

E6.1.1.7.3. Provide an agenda to the member organizations in sufficient time prior to a meeting so that Project Officers may obtain, prepare, and provide adequate Service or agency positions. Copies will also be provided to representative organizations, Service and ERDA headquarters, and the Chairman, MLC.

E6.1.1.7.4. Act as, or designate, the Chairman of Project Officer Meetings.

E6.1.1.7.5. Be responsible for coordination of project development efforts covered by this MOU, insuring that all member organizations are given an opportunity to state their positions. This coordination effort will include the preparation of a Coordinated Project Summary. Progress toward milestones in the CPS and issues which affect efficient, safe, and economical development/production/deployment will be made a matter of record at Project Officer Meetings.

E6.1.1.7.6. Forward recommended changes to military characteristics through Service channels to the MLC. Recommendations will include rationale which makes the changes desirable (e.g., trade-off benefits, new information, etc.). Recommendations will be made a matter of record in the proceedings of Project Officer Meetings.

E6.1.1.7.7. Distribute records of proceedings of Project Officer Meetings within 20 days after each meeting. Distribution of the POM records and the CPS and amendments will include member and representative organizations, Service and ERDA headquarters, and the Chairman, MLC.

E6.1.1.8. ADMINISTRATIVE PROCEDURES.

E6.1.1.8.1. The Project Officers assigned for a particular weapon project shall hold meetings at the call of the Lead Project Officer as required to discuss points of consideration which cannot be adequately handled in day-to-day liaison. Member organizations may request the Lead Project Officer to call meetings as considered necessary.

E6.1.1.8.2. Subcommittees necessary to carry out Project Officer functions will be organized by the Lead Project Officer to meet the particular needs of the project. However, a safety subcommittee shall be established for each project. The safety subcommittee shall insure that warhead/weapon and system safety analysis includes identification of all possible power sources and evaluation of the response of the warhead/weapon system to all credible normal/abnormal environments and

combinations thereof.

E6.1.1.8.3. The Project Officers for a particular development program will, except as otherwise provided for in this memorandum, establish operating procedures for the conduct of their meetings.

E6.1.1.8.4. The number of representatives attending a Project Officer Meeting will be held to a minimum consistent with the proper conduct of the business of the meeting.

E6.1.1.8.5. The Project Officers assigned for a particular weapon project shall be collectively associated with that project by reference to them as the "(Weapon Project) Project Officers." Typical variations in the titles of these groups will be required to distinguish their function as follows:

E6.1.1.8.5.1. "BXX Project Officers": The Project Officers assigned to coordinate the development of nuclear bombs.

E6.1.1.8.5.2. "F-X, B-XX, etc., Project Officers": The Project Officers assigned to coordinate the aircraft interfaces with nuclear weapons and assure interface compatibility with the nuclear weapons.

E6.1.1.8.5.3. "XXXX, XXX, etc., Project Officers": The Project Officers assigned to coordinate the design and development of special equipment or systems. For example, project officers assigned to coordinate the development of Aircraft Monitor and Control Systems would be known as "AMAC Project Officers".

E6.1.1.8.5.4. "WXX/MK-XX, WXX/XXXX, etc., Project Officers": The Project Officers assigned to coordinate the development of nuclear warheads, missiles, projectiles, ADM's, etc., and the interfaces with missile systems, reentry vehicles, etc.

E6.1.1.8.5.5. The project officers meeting will be identified similarly as WXX/XXX Project Officer Meeting (POM). The meetings may be further identified by a calendar year consecutive numbering system, e.g., B61 POM 74-1, 74-2, 74-3, etc.

E6.1.1.9. SUPERSESSIONS: This Memorandum supersedes that of, the similar title, dated 10 January 1967, and Modification 1 thereto, dated 6 June 1968, (ALO Contract Number ALO M/U AT (29-2)-2225).

E6.1.1.10. IMPLEMENTATION: This Memorandum is effective on the date of the last signature hereon.

ERDA

DATE: 8/21/75

BY: Alfred D. Starbird

Alfred D. Starbird
Assistant Administrator
for National Security

DOD

DATE: 9-4-75

BY: D. R. Cotter

D. R. Cotter
Chairman, Military Liaison Committee
to the U.S. Energy Research and
Development Administration

E7. ENCLOSURE 7

DESIGN REVIEW AND ACCEPTANCE GROUP (DRAAG) RESPONSIBILITIES AND PROCEDURES FOR NUCLEAR WEAPONS DESIGN REVIEWS AND STANDARDIZATION

E7.1. PURPOSE

This enclosure supersedes the "Charter for the Design Review and Acceptance Group (DRAAG)" (in effect since 11 December 1964), and provides for the continuation of design review and acceptance group functioning.

E7.2. RESPONSIBILITY

A design review and acceptance group (DRAAG) shall provide an independent review of the proposed Atomic Energy Commission (AEC) design of each nuclear weapon to determine the compliance of the design with requirements specified by the Military Characteristics (MC's) and Stockpile-to-Target Sequence (STS). In conducting this review of the weapons design, the DRAAG will act on behalf of the Military Departments, the Military Liaison Committee (MLC) and other interested DoD Components. Based upon its review, the DRAAG shall present findings and recommendations to the cognizant Military Department designated in the Department of Defense development engineering request (Phase 3). Such findings and recommendations will provide the basis for appropriate action to include MLC standardization action for each nuclear weapon in accordance with AEC-DoD Agreement (reference (e)).

E7.3. REPRESENTATION

A DRAAG for each nuclear weapon under review shall consist of a chairman and three principal members. The principals shall be in the rank of field grade or equivalent, selected, one by each Military Department (Army, Navy and Air Force). A chairman, preferably of Colonel or equivalent rank, shall be designated by the cognizant Department. Each of the principals may invite representatives from interested commands as consultants to the group. The chairman will arrange for such participations by the AEC and its laboratories, the Defense Nuclear Agency, and other technical consultants as may be necessary to assure a comprehensive review of the weapon design.

E7.4. PROCEDURES

The DRAAG shall review the proposed design of each nuclear weapon. The purpose of such reviews shall be to determine compliance of the design with the approved Military Characteristics (MC's) as augmented by the Stockpile-to-Target Sequence (STS) and to comment concerning probable acceptability of the design to the Department of Defense. In addition, a group shall review modifications to existing weapons made subsequent to the review of the final development report, which in the opinion of any of the principals, require a design review.

E7.4.1. The DRAAG shall meet to review the weapon design as soon as practicable but not later than eight weeks after the publication of each draft development report (preliminary, interim, final) by the AEC. A DRAAG meeting shall also be called by the chairman within six weeks after the request of any principal to review design changes made subsequent to the review of the final development report or after a request from the Atomic Energy Commission for such a design review. It is desirable that DRAAG meetings be convened expeditiously. Ideally, and in accordance with the AEC-DoD Agreement (reference (e)) first production (Phase 5) terminates with DoD's formal standardization action on the nuclear weapon. This means that the DRAAG review of the AEC final development report should be complete and available to OSD prior to the decision to proceed with quantity production (Phase 6).

E7.4.2. The principals shall perform necessary coordination and obtain comments from within their respective organizations prior to a formal DRAAG meeting and submit comments to the chairman prior to the meeting.

E7.4.3. The DRAAG will meet in the Albuquerque area (or elsewhere if deemed more appropriate) at the chairman's call. Agenda and detailed procedures and schedules for the conduct of each review shall be prescribed by the chairman.

E7.4.4. Subsequent to each DRAAG review of an AEC development report, the chairman will forward to the cognizant Department the proceedings of the review to include findings and recommendations of the DRAAG as to compliance of the design with the MC's and STS and the acceptability of the design to the DoD. The DRAAG chairman will not formally notify the AEC design laboratories or AEC Albuquerque Operations Office concerning the acceptability of the design.

E7.4.5. The cognizant Departments in coordination with the other interested

Departments and the Organization of the Joint Chiefs of Staff, will review the DRAAG proceedings. When the DRAAG has acted on a preliminary development report, the cognizant Department will forward a letter to the AEC, through the MLC, transmitting the DRAAG proceedings. The cognizant Department will make comments and recommendations appropriate to the information contained in the DRAAG proceedings and comment on the probable acceptability of the design to the DoD. The cognizant Department will provide information copies of the letter to OSD offices having responsibilities relating to nuclear weapons programs, and the other Services.

E7.4.6. When the DRAAG action pertains to an interim or final development report, the cognizant Department, in coordination with the other interested Military Departments and the Organization of the Joint Chiefs of Staff, will prepare a letter for signature by the Chairman, MLC, commenting on the acceptability of the design to the DoD. The proposed letter will list specific aspects of the design which fail to satisfy fully the MC's and STS, and will indicate which aspects, if any, should be considered a basis for delaying first production (Phase 5) or quantity production (Phase 6) of the weapon as appropriate. When the DRAAG action pertains to a final development report, the letter will also state whether the weapon is to be accepted as a limited or standard stockpile item. The cognizant Department will forward the proposed letter to the Chairman, MLC, for approval and transmittal to the AEC and will forward information copies to OSD offices having responsibilities relating to nuclear weapons programs and to the other Military Departments.

E7.4.7. When the DRAAG review of the final development report results in a recommendation by the cognizant Department that the item be accepted as a limited stockpile item, with continuation of significant development effort by the AEC recommended, such recommendation will be supported in accordance with DoD Instruction 7041.3 (reference (d)). The cognizant Department will request the AEC to provide the necessary information concerning costs, impacts and other information required for the evaluation of alternate courses of action (e.g., the costs and time to develop, test and procure a more reliable fuzing device, and to retrofit the stockpile to include costs to ship weapons back to an AEC retrofit facility, if required, operational impacts of retrofitting, not retrofitting, etc.).